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(54) **CUSHION SLEEVE**
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CPC . **H02G 3/30** (2013.01); **Y10T 24/14** (2015.01);
Y10T 24/1498 (2015.01)

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(56) **References Cited**
U.S. PATENT DOCUMENTS

RE8,679 E * 4/1879 Sheppard 24/23 R
842,240 A * 3/1906 Peck
834,758 A * 10/1906 Ross 24/23 B
1,084,407 A * 1/1914 Deist
1,118,222 A * 11/1914 Parks 24/17 R
2,011,634 A * 8/1935 Hirsh 24/200

2,214,436 A * 9/1940 Painter 24/1
2,293,562 A * 8/1942 Rosenthal 24/200
2,387,295 A * 10/1945 Robertson 248/74.3
2,473,209 A * 6/1949 Lombardi 24/321
2,618,450 A * 11/1952 Thomas 248/74.3
2,840,876 A * 7/1958 Bliss
2,914,827 A * 12/1959 Crammond 24/23 B
2,936,982 A * 5/1960 Cushenberry 248/74.3
2,958,889 A * 11/1960 Greenblatt 15/187
2,961,785 A * 11/1960 Toepfer 40/669
3,272,471 A * 9/1966 McMullah
3,545,719 A * 12/1970 Shulick
3,588,962 A * 6/1971 Feldberg 4/16 PB
3,724,456 A * 4/1973 Waxman 128/877
3,856,245 A * 12/1974 Byerly
4,107,454 A * 8/1978 Jakobsen
4,189,807 A * 2/1980 Byerly 24/16 R
4,229,924 A * 10/1980 Teachout, Sr. 53/399
4,317,262 A * 3/1982 Wells, Jr. 24/16 PB
4,318,518 A * 3/1982 Davis 248/60

(Continued)

FOREIGN PATENT DOCUMENTS

GB 2451492 A 2/2009

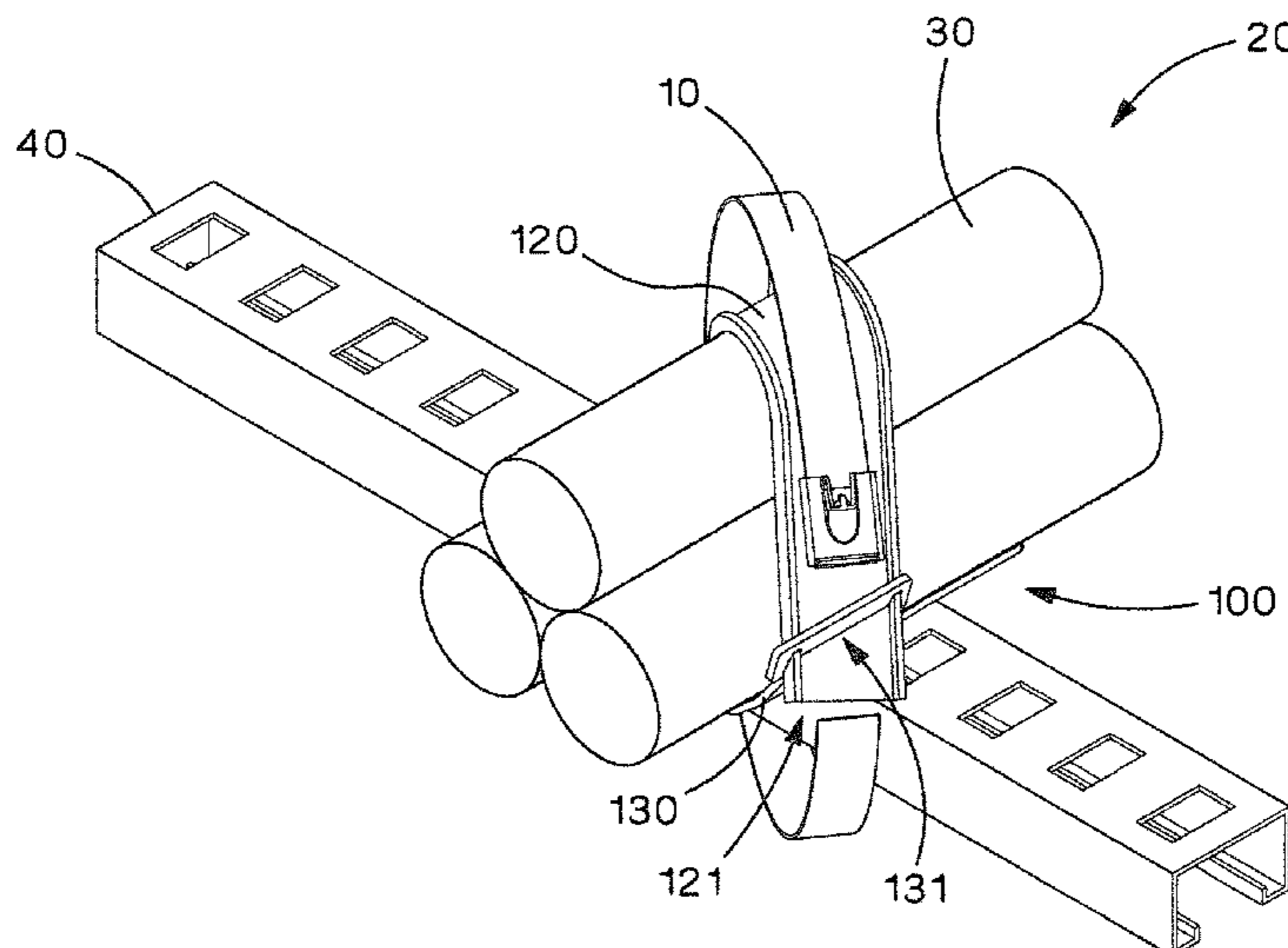
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(57) **ABSTRACT**

A cushion sleeve for a cable tie is provided. The cushion sleeve includes a body for receiving a bundle of cables. The body includes a first side and a second side opposite the first side. Additionally, the cushion sleeve includes a first arm extending from the first side of the body along a first axis and a second arm extending from the second side of the body along a second axis. The first axis is oblique to the second axis when the cushion sleeve is unwrapped such that the first arm engages the second arm when the cushion sleeve is wrapped around the bundle of cables.

24 Claims, 10 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

| | | | | | | | |
|--------------|------|---------|------------------|----------|----|--|--|
| 4,338,707 | A | 7/1982 | Byerly | | | | |
| 4,750,241 | A * | 6/1988 | Powell | 24/16 | R | | |
| 4,831,997 | A * | 5/1989 | Greene | 124/35.2 | | | |
| 4,841,961 | A * | 6/1989 | Burlage et al. | 128/876 | | | |
| 4,862,561 | A * | 9/1989 | Lichtenberg | 24/16 | PB | | |
| 4,870,722 | A | 10/1989 | Shell, Jr. | | | | |
| 4,912,779 | A * | 4/1990 | Laird | 2/12 | | | |
| 5,007,138 | A * | 4/1991 | Pritchard et al. | 24/23 | B | | |
| 5,103,534 | A * | 4/1992 | Caveney | 24/16 | PB | | |
| 5,230,489 | A * | 7/1993 | White et al. | 248/74.2 | | | |
| 5,507,043 | A * | 4/1996 | Howe | 2/159 | | | |
| 5,581,850 | A * | 12/1996 | Acker | 24/16 | PB | | |
| 5,584,623 | A | 12/1996 | Nadherny | | | | |
| 5,655,654 | A * | 8/1997 | Broskow | 206/150 | | | |
| 5,718,413 | A | 2/1998 | Nagler | | | | |
| 5,746,401 | A | 5/1998 | Condon | | | | |
| 5,799,376 | A * | 9/1998 | Harsley | 24/16 | PB | | |
| 5,832,568 | A * | 11/1998 | Higuchi | 24/30.5 | R | | |
| 6,018,874 | A * | 2/2000 | Todd | 30/210 | | | |
| 6,463,827 | B1 | 10/2002 | Oetiker | | | | |
| 6,637,130 | B2 * | 10/2003 | Urie et al. | 36/11.5 | | | |
| 7,100,248 | B2 * | 9/2006 | Crook | 24/16 | PB | | |
| 7,217,201 | B2 * | 5/2007 | Sealy | 473/422 | | | |
| 7,340,803 | B2 * | 3/2008 | Howell | 24/198 | | | |
| 7,464,442 | B2 * | 12/2008 | Laporte | 24/20 | R | | |
| 7,866,005 | B2 * | 1/2011 | Vermeer et al. | 24/16 | PB | | |
| 8,191,210 | B2 * | 6/2012 | Devers | 24/265 | WS | | |
| 8,474,392 | B2 * | 7/2013 | Masters et al. | 114/243 | | | |
| 2003/0041417 | A1 * | 3/2003 | Smith | 24/16 | R | | |
| 2003/0167605 | A1 * | 9/2003 | Schultz | 24/306 | | | |
| 2004/0031896 | A1 | 2/2004 | Heath | | | | |
| 2005/0278901 | A1 * | 12/2005 | Huang | 24/16 | R | | |
| 2009/0026236 | A1 | 1/2009 | Krause | | | | |
| 2010/0236030 | A1 | 9/2010 | Dyer | | | | |
| 2011/0271494 | A1 * | 11/2011 | Bellamy et al. | 24/16 | R | | |
| 2012/0180268 | A1 * | 7/2012 | Chen | 24/16 | R | | |
| 2012/0180270 | A1 * | 7/2012 | Marmelstein | 24/16 | R | | |
| 2012/0210541 | A1 * | 8/2012 | Koncelik, Jr. | 24/21 | | | |
| 2014/0283340 | A1 * | 9/2014 | Beckman | 24/16 | PB | | |

* cited by examiner

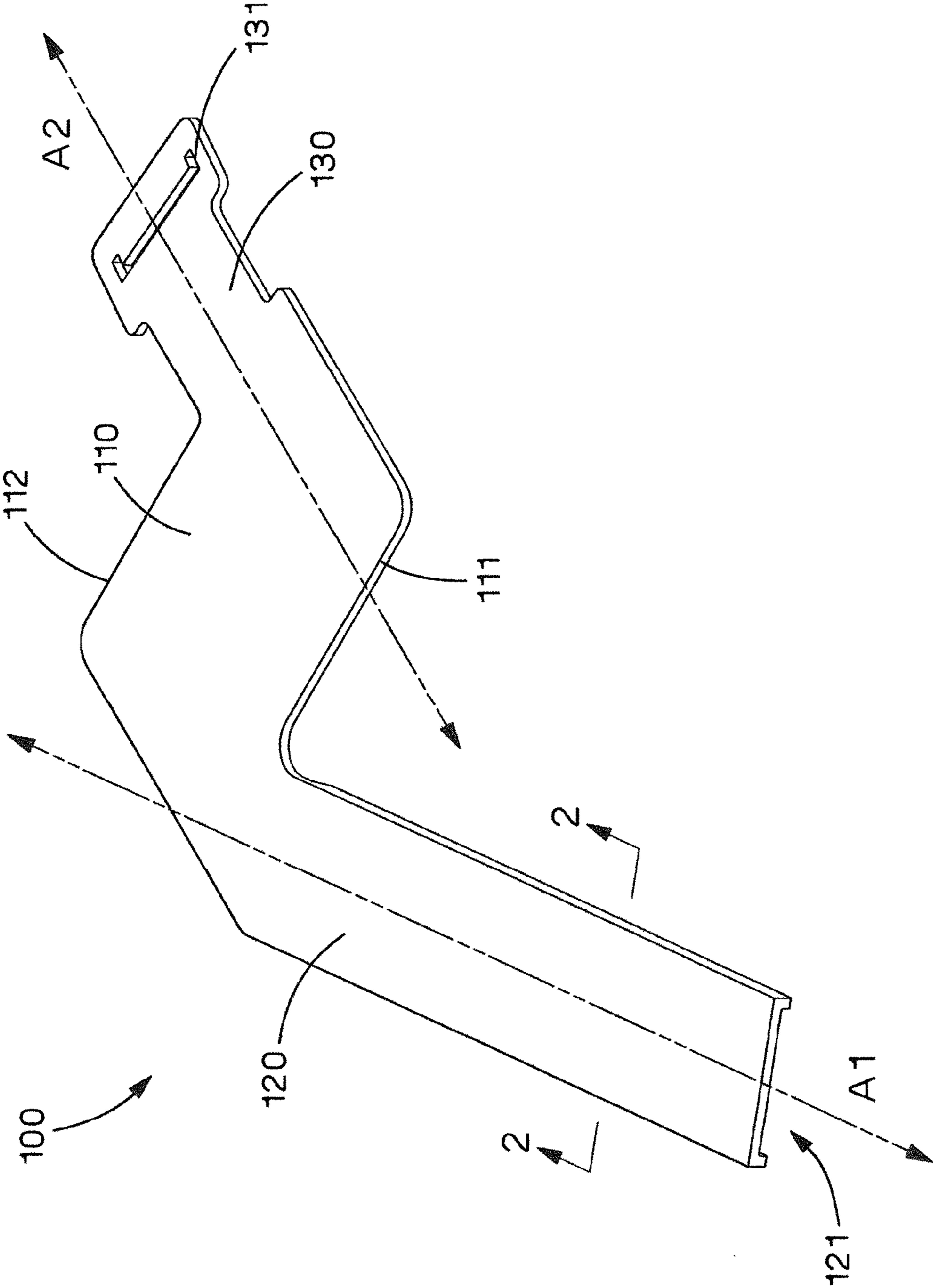


FIG.1A

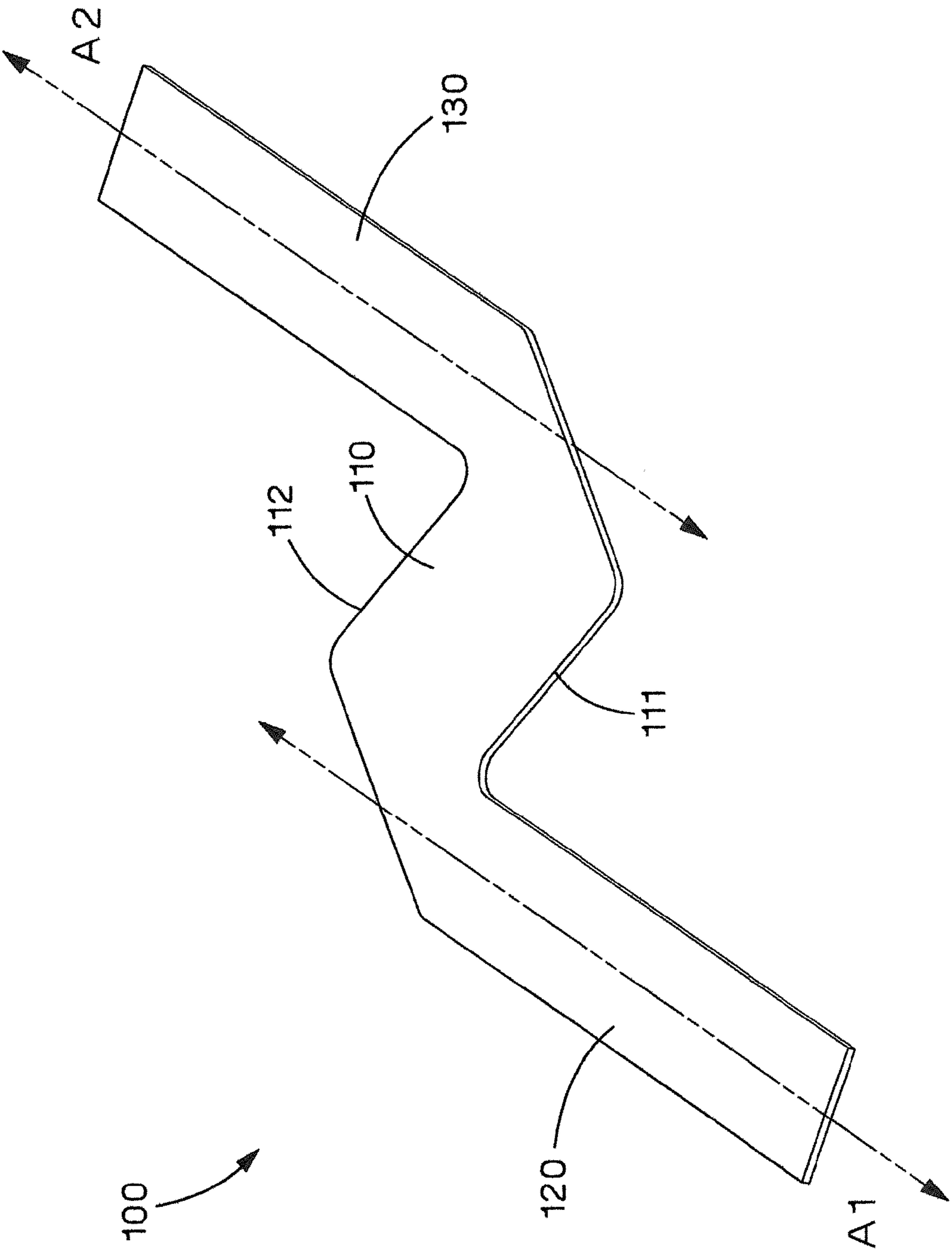


FIG.1B

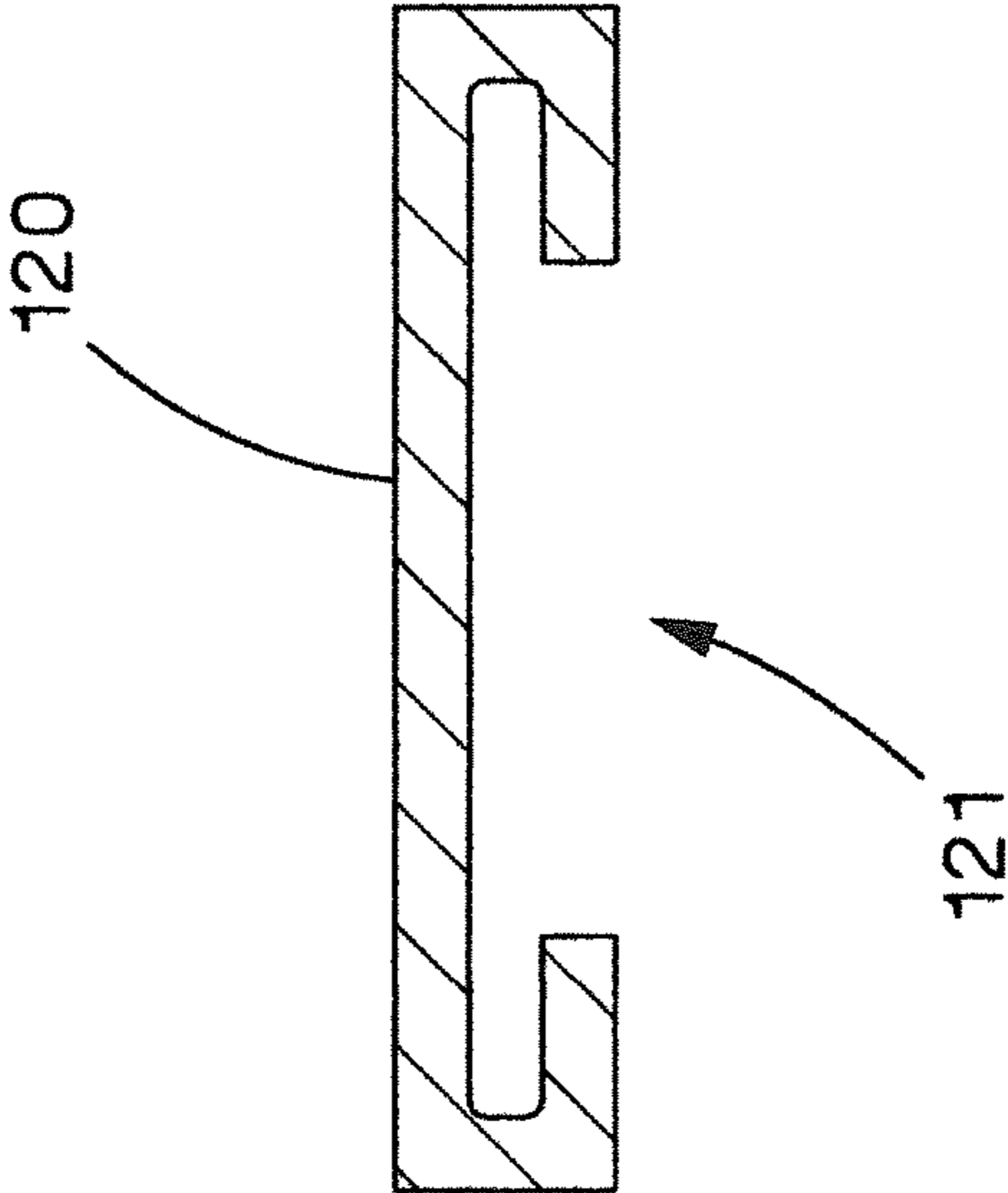


FIG. 2A

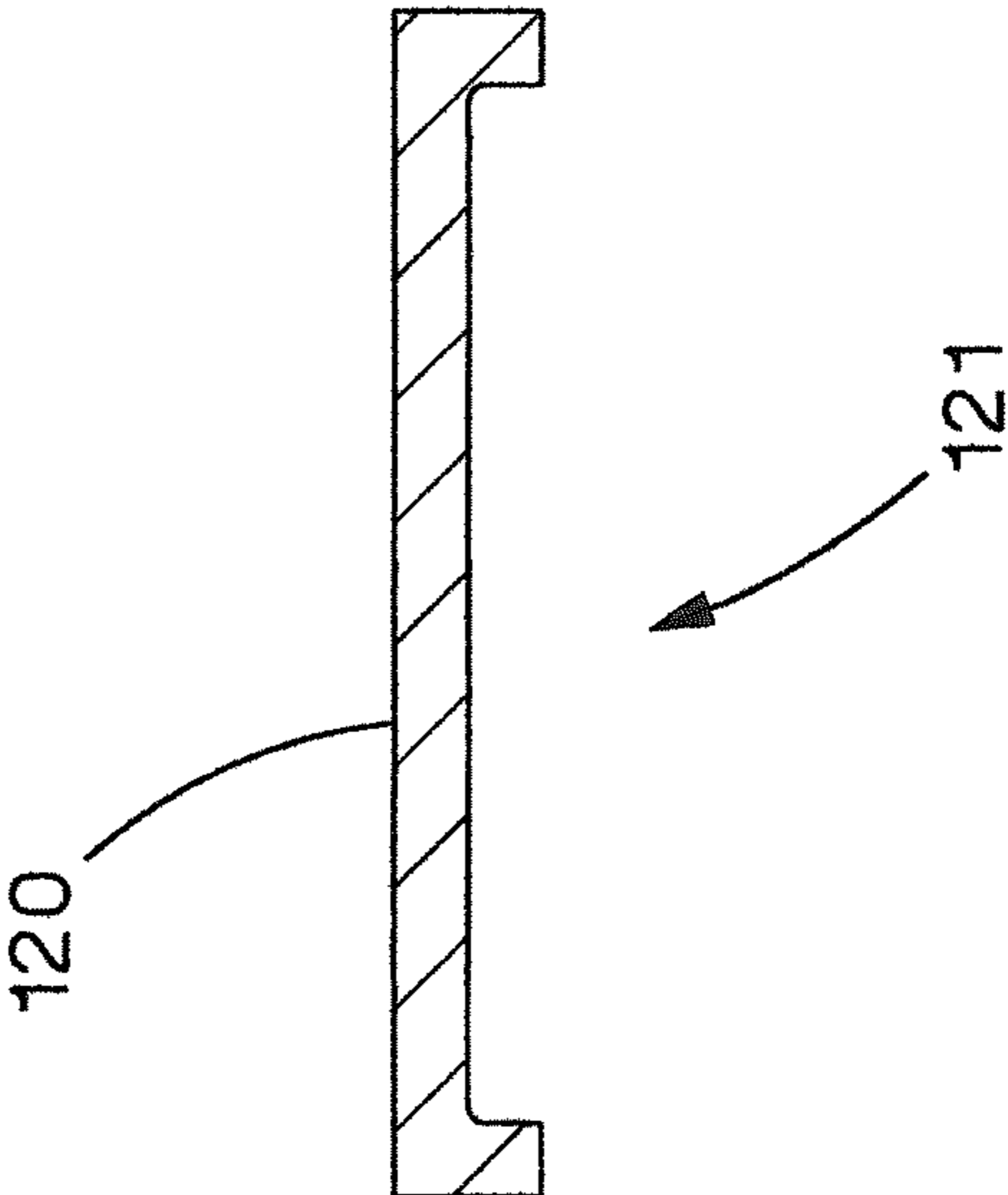


FIG. 2B

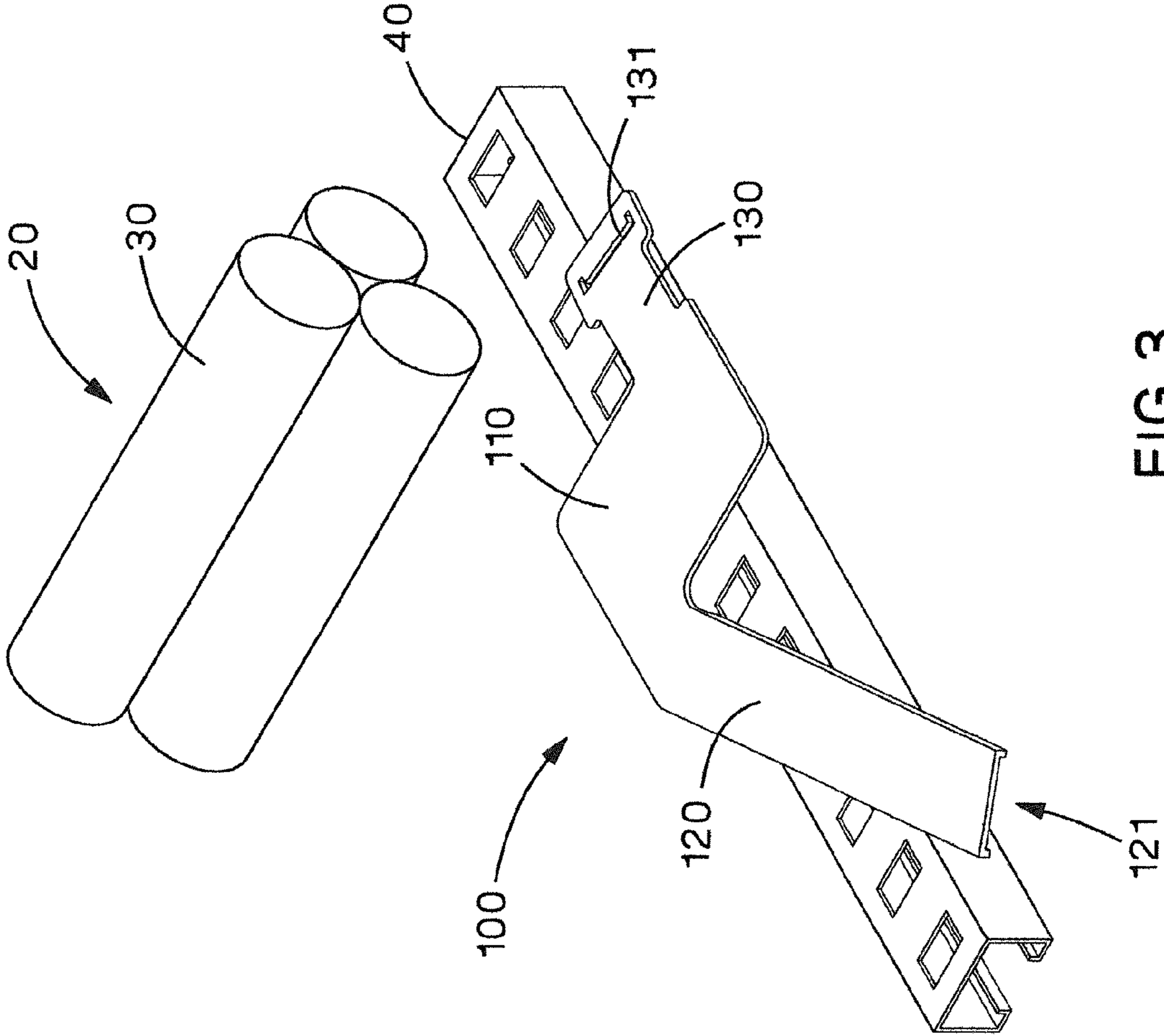


FIG.3

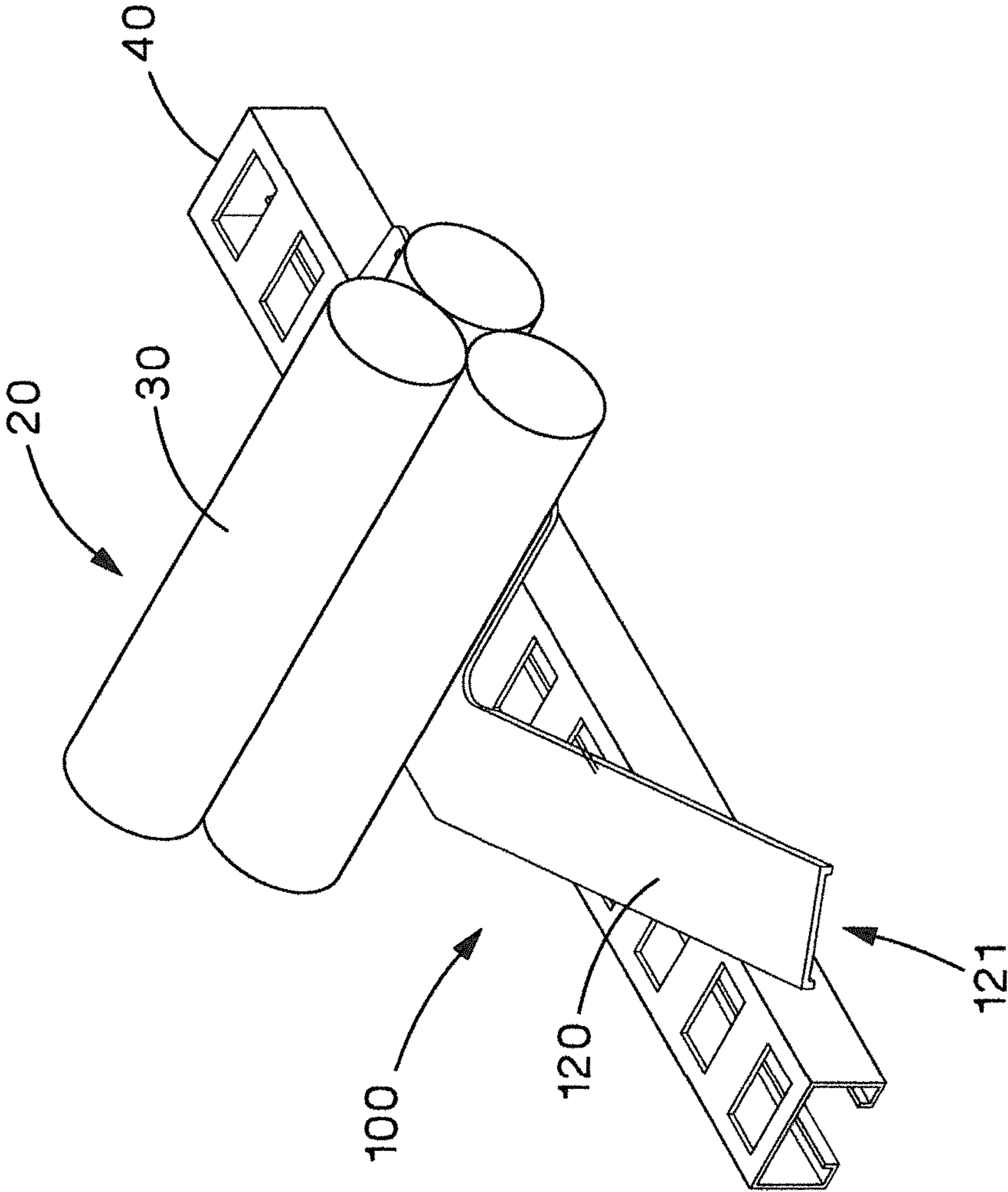


FIG.4

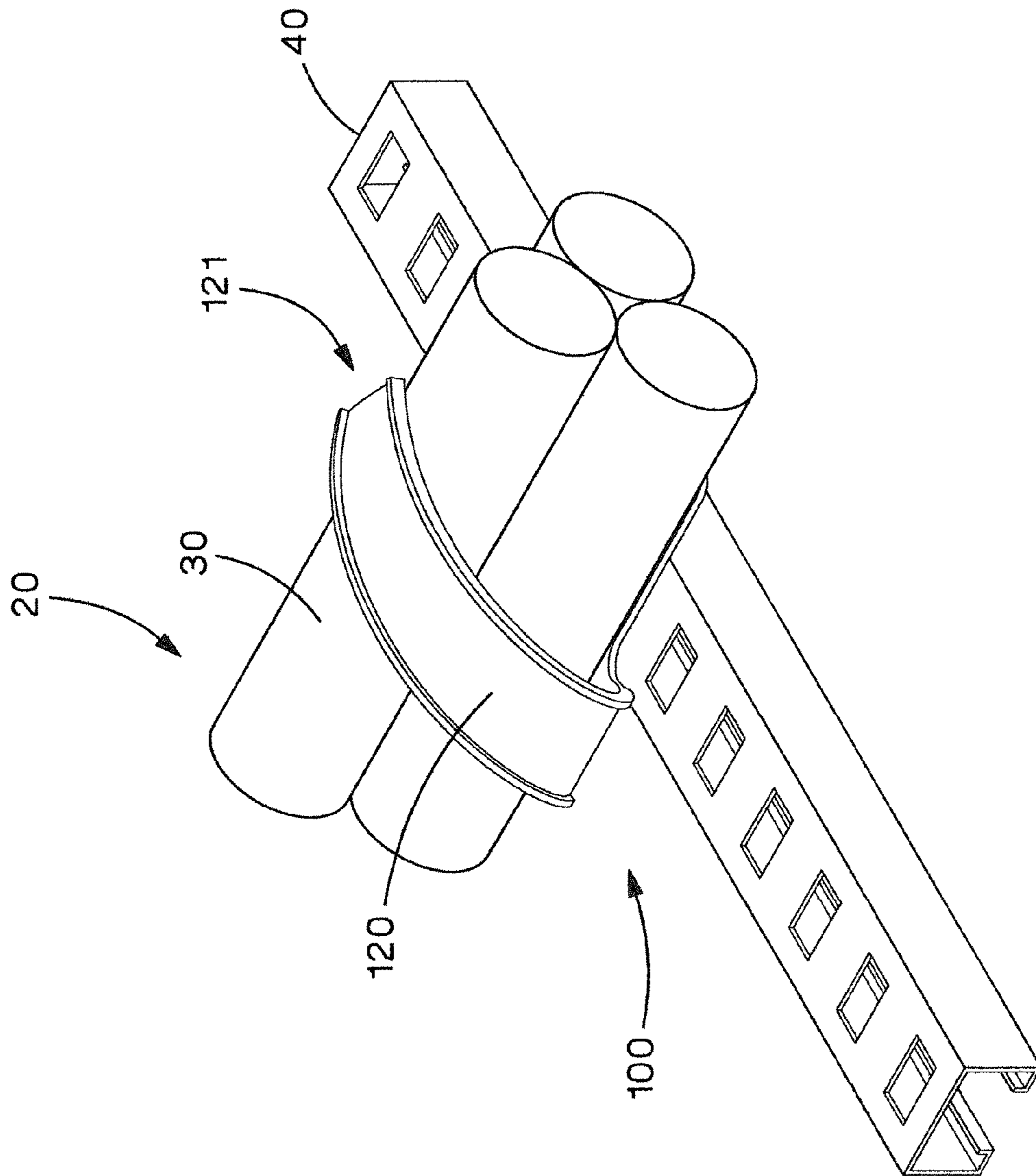


FIG. 5

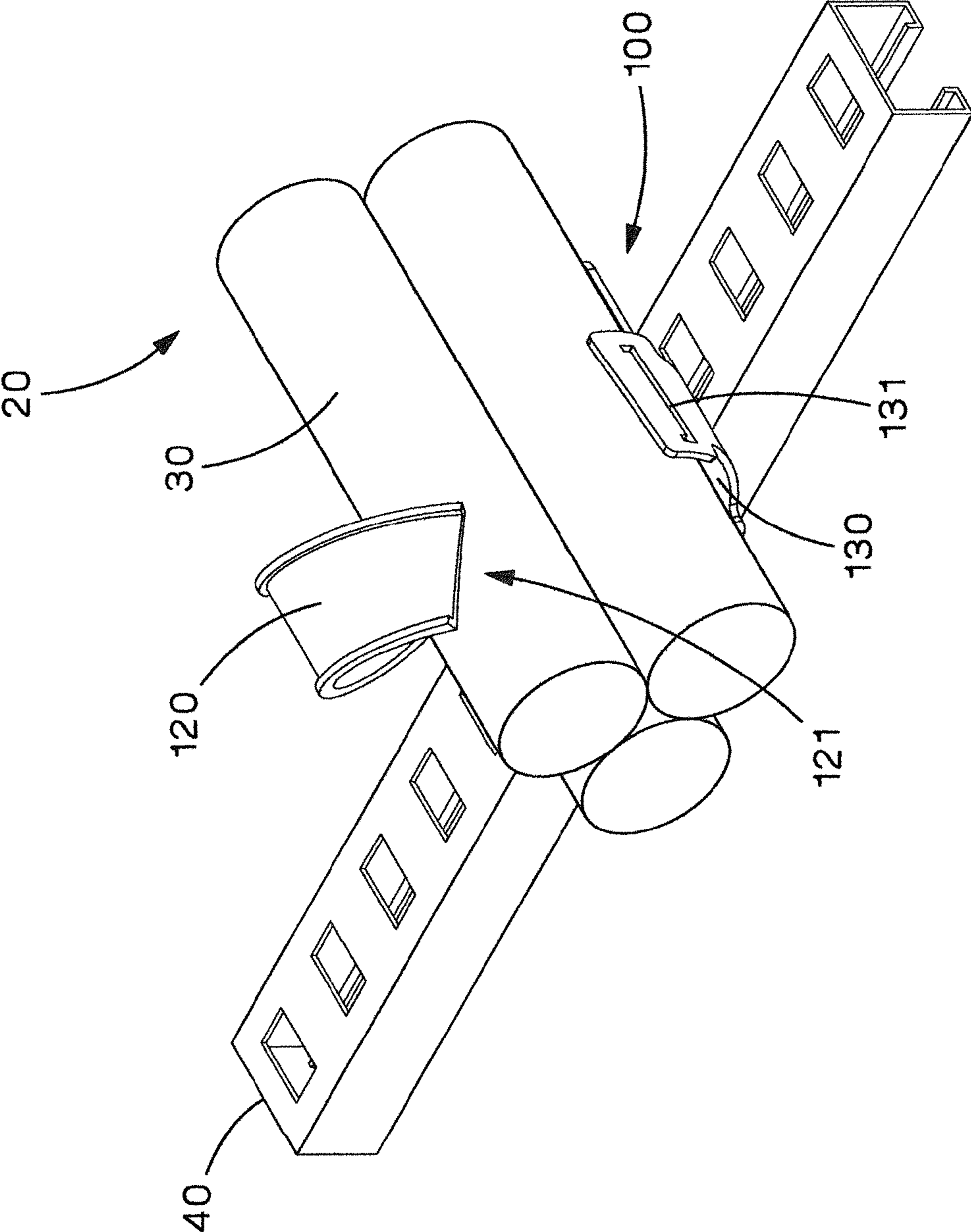


FIG. 6

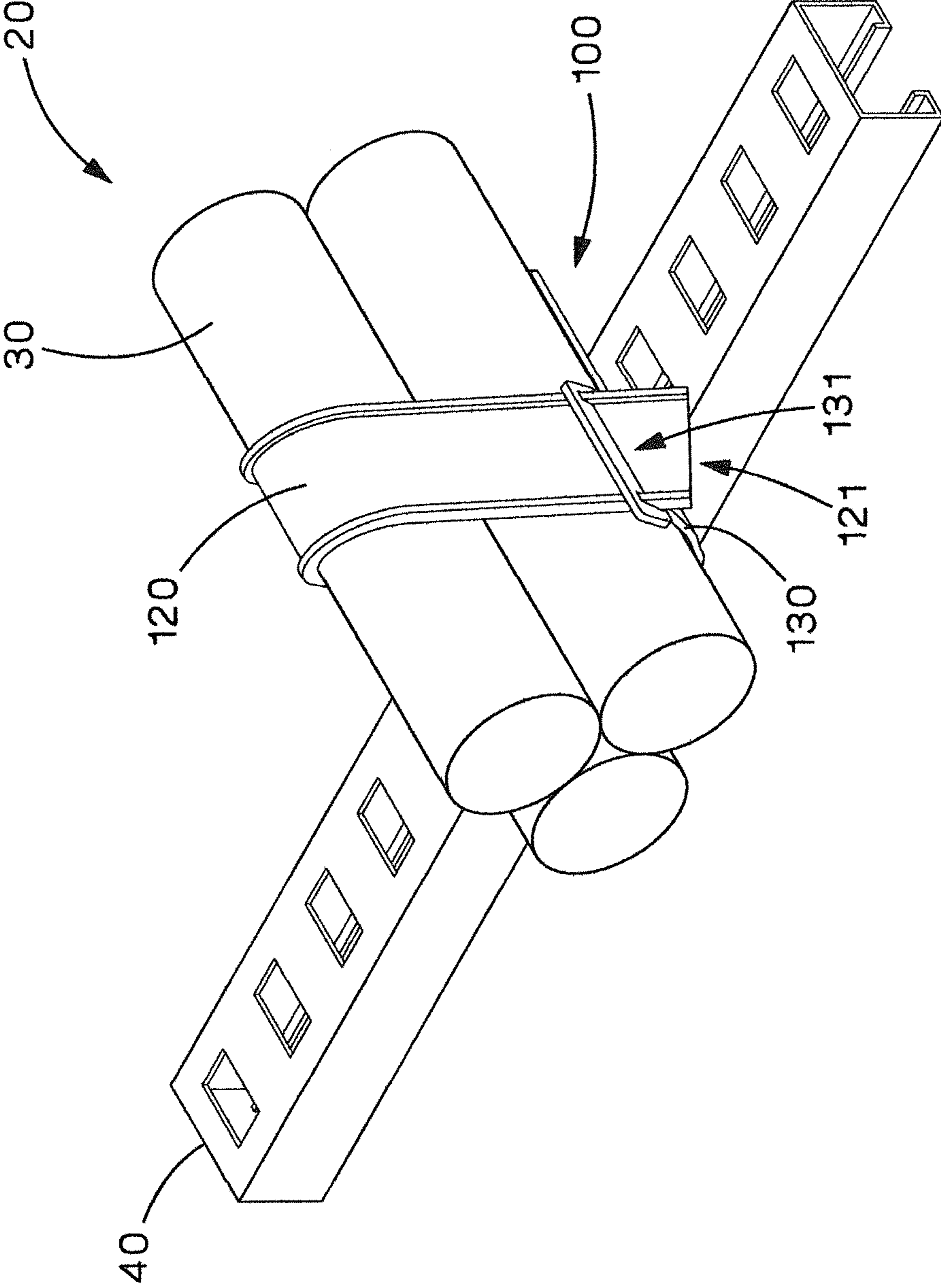


FIG.7

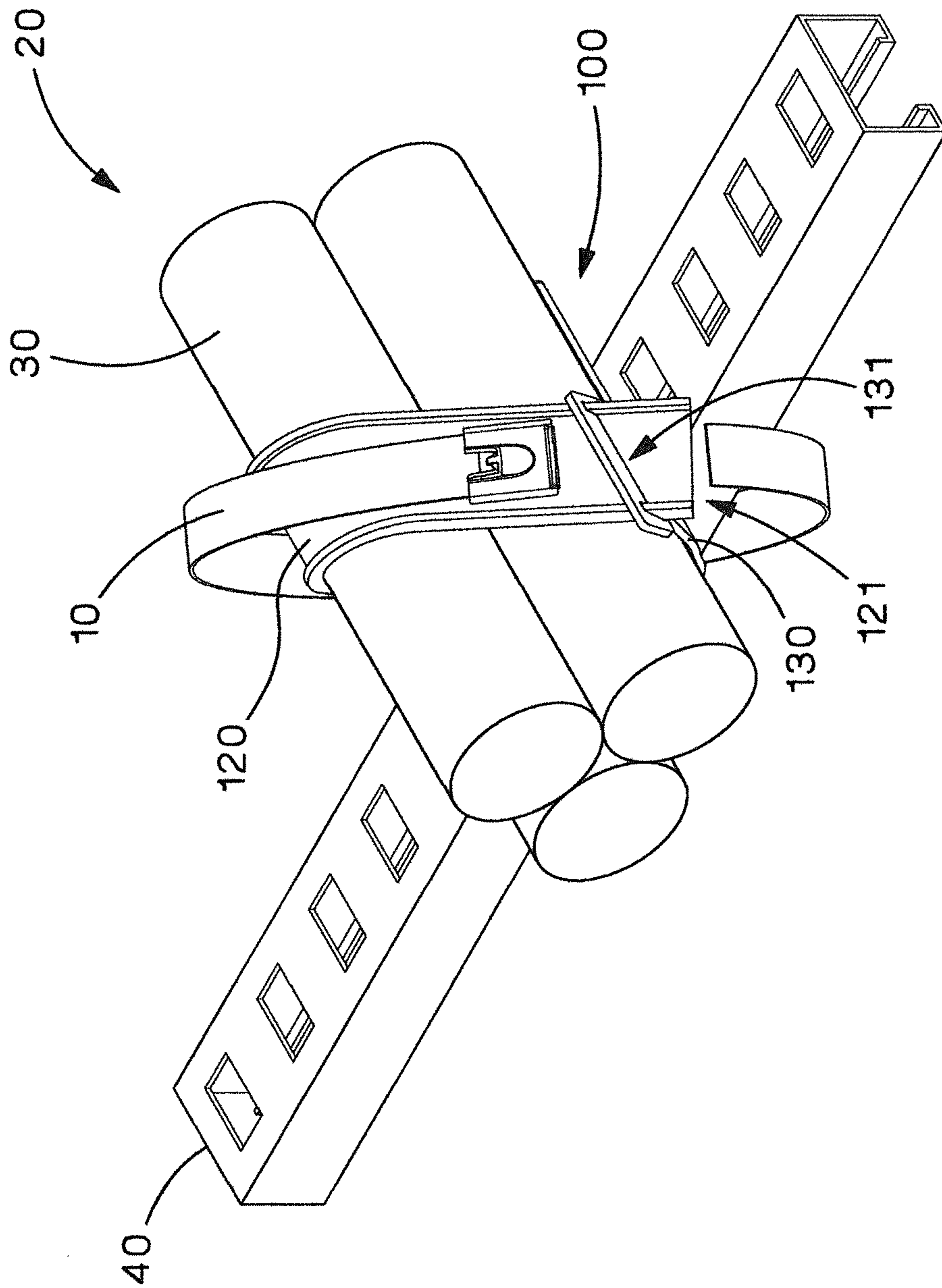


FIG. 8

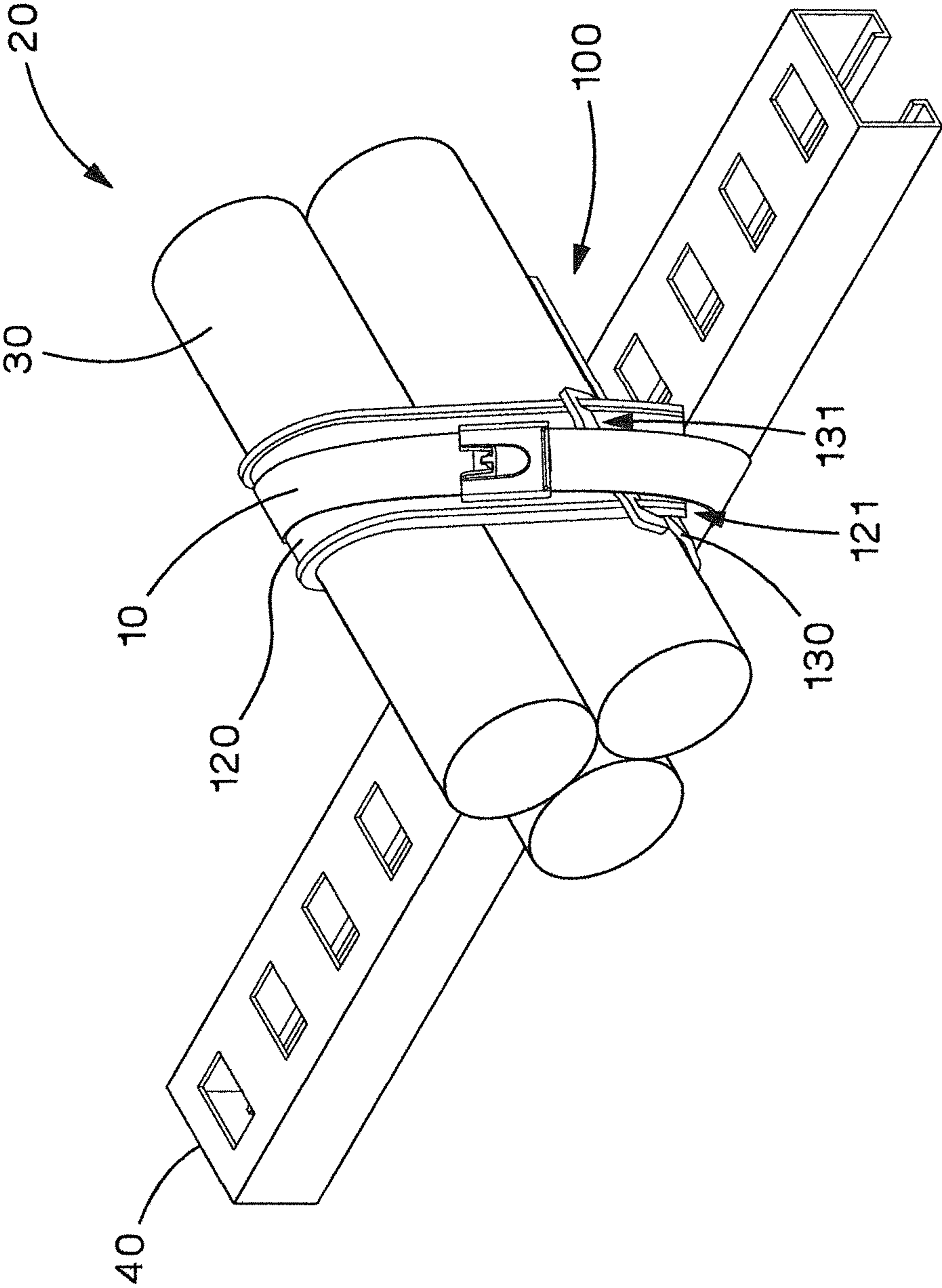


FIG. 9

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CUSHION SLEEVE

BACKGROUND OF THE INVENTION

The present invention relates to a cushion sleeve for a cable tie, and more particularly, a cushion sleeve for a cable tie installed diagonally about a bundle of cables and an adjacent support member that is affordable and easy to install.

Cushion sleeves for cable ties are well known in the art. For example, existing cushion sleeves, such as Panduit's PCS Cushion Sleeves, are for cable ties, such as Panduit's Pan-Steel® Cable Ties, installed perpendicular to a bundle of cables and parallel to an adjacent support member, such as a rung of a ladder rack. The cushion sleeve protects the bundle of cables from being damaged by the cable ties, for example, during a short circuit event. However, it is difficult to install cable ties in this manner because of variations in rung design, as well as the proximity of other obstructions.

Cable cleats are also well known in the art. For example, existing cable cleats, such as Ellis Patents' Vulcan and Emperor Cable Cleats, provide an alternative to cable ties and cushion sleeves for cable ties. However, cable cleats are expensive and difficult to install because cable cleats typically require additional mounting hardware that has been configured for a specific cable routing system.

Cable ties are more affordable and easier to install than cable cleats because, unlike cable cleats, cable ties do not require any additional mounting hardware, much less additional mounting hardware that has been configured for a specific cable routing system.

Additionally, it is easier to install cable ties diagonally about the bundle of cables and the adjacent support member than perpendicular to a bundle of cables and parallel to an adjacent support member. However, when cable ties are installed in this manner, there is more risk of damage to the bundle of cables because the bundle of cables is exposed to the edges of the cable tie.

Therefore, there is a need for a cushion sleeve for a cable tie installed diagonally about a bundle of cables and an adjacent support member that is affordable and easy to install.

SUMMARY OF THE INVENTION

Certain embodiments of the present invention provide a cushion sleeve for a cable tie. The cushion sleeve includes a body for receiving a bundle of cables. The body includes a first side and a second side opposite the first side. Additionally, the cushion sleeve includes a first arm extending from the first side of the body along a first axis and a second arm extending from the second side of the body along a second axis. The first axis is oblique to the second axis when the cushion sleeve is unwrapped such that the first arm engages the second arm when the cushion sleeve is wrapped around the bundle of cables.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is first side perspective view of a cushion sleeve for a cable tie installed diagonally about a bundle of cables and an adjacent support member according to an embodiment of the present invention;

FIG. 1B is first side perspective view of a cushion sleeve for a cable tie installed diagonally about a bundle of cables and an adjacent support member according to an alternative embodiment of the present invention;

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FIG. 2A is a cross-sectional view taken along line 2-2 of FIG. 1, showing a U-shaped channel for receiving the cable tie;

FIG. 2B is a cross-sectional view similar to the cross-sectional view of FIG. 2A, showing a C-shaped channel for receiving the cable tie according to an alternative embodiment of the present invention;

FIG. 3 is a first side perspective view of the cushion sleeve of FIG. 1, showing the cushion sleeve positioned on the support member;

FIG. 4 is a first side perspective view of the cushion sleeve of FIG. 1, showing the bundle of cables positioned on a body of the cushion sleeve;

FIG. 5 is a first side perspective view of the cushion sleeve of FIG. 1, showing a first arm positioned around the bundle of cables;

FIG. 6 is a second side perspective view of the cushion sleeve of FIG. 1, showing a second arm positioned around the bundle of cables;

FIG. 7 is a second side perspective view of the cushion sleeve of FIG. 1, showing the cushion sleeve secured around the bundle of cables;

FIG. 8 is a second side perspective view of the cushion sleeve of FIG. 1, showing the cable tie positioned around the cushion sleeve, the bundle of cables, and the support member; and

FIG. 9 is a second side perspective view of the cushion sleeve of FIG. 1, showing the cable tie secured around the cushion sleeve, the bundle of cables, and the support member.

DETAILED DESCRIPTION

FIGS. 1-9 illustrate a cushion sleeve 100 for a cable tie 10, such as Panduit's Pan-Steel® Cable Ties, installed diagonally about a bundle 20 of cables 30 and an adjacent support member 40, such as a rung of a ladder rack, according to several embodiments of the present invention.

As shown in FIG. 1A, the cushion sleeve 100 includes a body 110 for receiving a bundle 20 of cables 30. The body 110 includes a first side 111 and a second side 112 opposite the first side 111. Preferably, the body 110 is rectangular, but it is likewise contemplated that the body 110 is elliptical or any other suitable shape for receiving the bundle 20 of cables 30.

Additionally, as shown in FIG. 1A, the cushion sleeve 100 includes a first arm 120 extending from the first side 111 of the body 110 along a first axis A1 and a second arm 130 extending from the second side 112 of the body 110 along a second axis A2. The first axis A1 is oblique to the second axis A2 when the cushion sleeve 100 is unwrapped such that the first arm 120 engages the second arm 130 when the cushion sleeve 100 is wrapped around the bundle 20 of cables 30.

Alternatively, as shown in FIG. 1B, the first axis A1 is oblique to the first side and parallel to the second axis A2 when the cushion sleeve 100 is unwrapped such that the first arm 120 engages the second arm 130 when the cushion sleeve 100 is wrapped around the bundle 20 of cables 30.

As shown in FIG. 1A, the first arm 120 includes a channel 121 for receiving the cable tie 10. Preferably, the channel is U-shaped (FIG. 2A), but it is likewise contemplated that the channel 121 is C-shaped (FIG. 2B) or any other suitable shape for receiving the cable tie 10.

Additionally, as shown in FIG. 1A, the second arm 130 includes an opening 131 for receiving the first arm 120 and releasably connecting the first arm 120 to the second arm 130. Preferably, the shape of the opening 131 corresponds to the shape of the channel 121. For example, as shown in FIG. 1A, the opening 131 is U-shaped, but it is likewise contemplated

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that the opening **131** is C-shaped or any other suitable shape corresponding to the shape of the channel **121**.

As shown in FIG. **3**, the cushion sleeve **100** is positioned on the support member **40**.

As shown in FIG. **4**, the bundle **20** of cables **30** is positioned on the body **110** of the cushion sleeve **100**.

As shown in FIG. **5**, the first arm **120** of the cushion sleeve **100** is wrapped around the bundle **20** of cables **30**.

As shown in FIG. **6**, the second arm **130** of the cushion sleeve **100** is wrapped around the bundle **20** of cables **30**.

As shown in FIG. **7**, the first arm **120** of the cushion sleeve **100** engages the second arm **130** of the cushion sleeve **100**. More particularly, the opening **131** in the second arm **130** of the cushion sleeve **100** receives the channel **121** of the first arm **120** of the cushion sleeve **100** and releasably connects the first arm **120** of the cushion sleeve **100** to the second arm **130** of the cushion sleeve **100**.

As shown in FIG. **8**, the cable tie **10** is installed diagonally about the bundle **20** of cables **30** and the support member **40**. The cable tie **10** is single-looped, but it is likewise contemplated that the cable tie **10** is multi-looped, for example, double-looped or triple-looped, to further increase the strength of the connection.

As shown in FIG. **9**, the channel **121** receives the cable tie **10** when the cable tie **20** is secured around the cushion sleeve **100**, the bundle **20** of cables **30**, and the support member **40**.

While this invention has been described in conjunction with the exemplary embodiments outlined above, various alternatives, modifications, variations, and/or improvements, whether known or presently unforeseen, may become apparent. Accordingly, the exemplary embodiments of the invention as set forth above are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention.

The invention claimed is:

1. A cushion sleeve comprising:

a body receiving a bundle of cables, the body disposed between the bundle of cables and a support member, the body having a first side and a second side spaced apart from the first side, the body receiving the bundle of cables along a body axis, the body axis disposed between the first side and the second side and parallel to a longitudinal axis of the bundle of cables;

a first arm disposed about the bundle of cables and between the bundle of cables and a cable tie, the first arm integrally formed with the body and extending from the first side of the body along a first arm axis; and

a second arm disposed about the bundle of cables and between the bundle of cables and the cable tie, the second arm integrally formed with the body and extending from the second side of the body along a second arm axis,

wherein, when the cushion sleeve is laid flat entirely in a single plane, the first arm axis is oblique relative to the body axis and the second arm axis such that, when the cushion sleeve is disposed about the bundle of cables, the first arm engages the second arm.

2. The cushion sleeve of claim **1**, wherein the first arm includes a channel for receiving the cable tie.

3. The cushion sleeve of claim **2**, wherein the channel is U-shaped.

4. The cushion sleeve of claim **2**, wherein the channel is C-shaped.

5. The cushion sleeve of claim **1**, wherein the second arm includes an opening for receiving the first arm.

6. The cushion sleeve of claim **5**, wherein the opening releasably connects the first arm to the second arm.

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7. The cushion sleeve of claim **5**, wherein the opening is U-shaped.

8. The cushion sleeve of claim **5**, wherein the opening is C-shaped.

9. A cushion sleeve comprising:

a body receiving a bundle of cables, the body disposed between the bundle of cables and a support member, the body having a first side and a second side spaced apart from the first side, the body receiving the bundle of cables along a body axis, the body axis disposed between the first side and the second side and parallel to a longitudinal axis of the bundle of cables;

a first arm disposed about the bundle of cables and between the bundle of cables and a cable tie, the first arm integrally formed with the body and extending from the first side of the body along a first arm axis; and

a second arm disposed about the bundle of cables and between the bundle of cables and the cable tie, the second arm integrally formed with the body and extending from the second side of the body along a second arm axis,

wherein, when the cushion sleeve is laid flat entirely in a single plane, the first arm axis is oblique relative to the body axis and parallel to the second arm axis such that, when the cushion sleeve is disposed about the bundle of cables, the first arm engages the second arm.

10. The cushion sleeve of claim **9**, wherein the first arm includes a channel for receiving the cable tie.

11. The cushion sleeve of claim **10**, wherein the channel is U-shaped.

12. The cushion sleeve of claim **10**, wherein the channel is C-shaped.

13. The cushion sleeve of claim **9**, wherein the second arm includes an opening for receiving the first arm.

14. The cushion sleeve of claim **13**, wherein the opening releasably connects the first arm to the second arm.

15. The cushion sleeve of claim **13**, wherein the opening is U-shaped.

16. The cushion sleeve of claim **13**, wherein the opening is C-shaped.

17. A cushion sleeve comprising:

a body receiving a bundle of cables, the body disposed between the bundle of cables and a support member, the body having a first side and a second side spaced apart from the first side, the body receiving the bundle of cables along a body axis, the body axis disposed between the first side and the second side and parallel to a longitudinal axis of the bundle of cables;

a first arm disposed about the bundle of cables and between the bundle of cables and a cable tie, the first arm integrally formed with the body and extending from the first side of the body along a first arm axis, the first arm having a cross-sectional shape; and

a second arm disposed about the bundle of cables and between the bundle of cables and the cable tie, the second arm integrally formed with the body and extending from the second side of the body along a second arm axis, the second arm having a corresponding cross-sectional opening for receiving the first arm with the cross-sectional shape,

wherein, when the cushion sleeve is laid flat entirely in a single plane, the first arm axis is oblique relative to the body axis and the second arm axis such that, when the cushion sleeve is disposed about the bundle of cables, the first arm is releasably connected to the second arm via the opening to secure the bundle of cables.

18. The cushion sleeve of claim 17, wherein the first arm includes a channel for receiving the cable tie.

19. The cushion sleeve of claim 18, wherein the channel is U-shaped.

20. The cushion sleeve of claim 18, wherein the channel is C-shaped. 5

21. The cushion sleeve of claim 19, wherein the opening is U-shaped.

22. The cushion sleeve of claim 20, wherein the opening is C-shaped. 10

23. The cushion sleeve of claim 17, wherein the opening is U-shaped.

24. The cushion sleeve of claim 17, wherein the opening is C-shaped.

* * * * *